

Figure 1

Anti-CD3 WT

GATATCAAACTGCAGCAGTCAGGGGCTGAACTGGCAAGACCTGGGGCCTCAGTGAAGATGTCCT
GCAAGACTTCTGGCTACACCTTTACTAGGTACACGATGCACCTGGGTAAACAGAGCCTGGACA
GGGTCTGGAATGGATTGGATACATTAACTCTAGCCGTGGTTATACTAATTACAATCAGAAGTTC
AAGGACAAGGCCACATTGACTACAGACAAATCCTCCAGCACAGCCTACATGCAACTGAGCAGCC
TGACATCTGAGGACTCTGCAGTCTATTACTGTGCAAGATATTATGATGATCATTAATGCTTGA
CTACTGGGCCAAGGCACCACTCTCACAGTCTCCTCAGTCGAAGTGGAAGTGGAGGTTCTGGT
GGAAGTGGAGGTTGAGTGGAGTCGACGACATTTCAGCTGACCCAGTCTCCAGCAATCATGTCTG
CATCTCCAGGGGAGAAGGTCACCATGACCTGCAGAGCCAGTTCAGTGTAAGTTACATGAACGTG
GTACCAGCAGAAGTCAGGCACCTCCCCAAAAGATGGATTTATGACACATCCAAAGTGGCTTCT
GGAGTCCCTTATCGCTTCAGTGGCAGTGGGTCTGGGACCTCATACTCTCACAAATCAGCAGCA
TGGAGGCTGAAGATGCTGCCACTTATTACTGCCAACAGTGGAGTAGTAACCCGCTCACGTTCCG
TGCTGGGACCAAGCTGGAGCTGAAA

AA Sequence

DIKLQSGAELARPGASVKMSCKTSGYTFTRYTMHWVKQRPQGGLWIGYINPSRGYTNYNQKF
KDKATLTLDKSSSTAYMQLSSLTSEDSAVYYCARYYDDHYCLDYWGQGTTLTVSSVEGSGSG
SGSGSGVDDIQLTQSPAIMASPGEKVTMTCRASSSVSYMNWYQQKSGTSPKRWIYDTSKVAS
GVPYRFSGSGTSYSLTISSMEAEDAATYCCQQWSSNPLTFGAGTKLELK

Fig. 2 A

VH2

DVQLVQSGAEVKKPGASVKVSCKASGYTATRYTMHWVRQAPGQGLEWIGYINPSR
GYTNYAQKLQGRVTMTTDTSTSTAYMELSSLRSEDATYYCARYYDDHYCLDYWG
QGTTVTVSS

VH3

DVQLVQSGAEVKKPGASVKVSCKASGYTATRYTMHWVRQAPGQGLEWIGYINPSR
GYTNYAQKLQGRVTMTTDTSTSTAYLQMNSLKTEDTAVYYCARYYDDHYCLDYWG
QGTTVTVSS

VH5

DVQLVQSGAEVKKPGASVKVSCKASGYTFTRYTMHWVRQAPGQGLEWIGYINPSR
GYTNYADSVKGRFTITTDKSTSTAYMELSSLRSEDATYYCARYYDDHYCLDYWG
QGTTVTVSS

VH7

DVQLVQSGAEVKKPGASVKVSCKASGYTFTRYTMHWVRQAPGQGLEWIGYINPSR
GYTNYNQKFKDRVTITTDKSTSTAYMELSSLRSEDATVYYCARYYDDHYCLDYWG
QGTTVTVSS

Fig. 2 A (cont.)

VL1

DIQMTQSPSSLSASVGDRVTITCRASQSVSYMNWYQQKPGKAPKRWIYDT
SKVASGVPARFSGSGTDYSLTINSLEAEDAATYYCQQWSSNPLTFGGG
TKVEIK

VL2

DIVLTQSPATLSLSPGERATLSCRASQSVSYMNWYQQKPGKAPKRWIYDT
SKVASGVPARFSGSGTDYSLTINSLEAEDAATYYCQQWSSNPLTFGGG
TKVEIK

VL3

DIVLTQSPATLSLSPGERATLTCRASSVSYMNWYQQKPGKAPKRWIYDT
SKVASGVPARFSGSGTDYSLTINSLEAEDAATYYCQQWSSNPLTFGGG
TKVEIK

Fig. 2 B

VH2

GACGTCCAACCTGGTGCAGTCAGGGGCTGAAGTGAAAAAACCTGGGGCCTCAGTGAAGGTGTCCTGCAAGCTTCTGGCTACACCGCTACTAGGTACACGATGCACCTGGTAAGCAGGCACCTGGACAGGGTCTGGAATGGATTGGATACATTAACTCCTAGCCGTGGTTATACTAATAATACGCACAGAAAGTTGCAGGGCCGCGTCACAATGACTACAGACACTTCCACCAGCACAGCCCTACATGGAACCTGAGCAGCCTGCGTTCTGAGGACACTGCAACCTATTACTGTGCAAGATATTATGATGATCATTACTGCCTTGACTACTGAGGGCCAAAGGCACCACGGTCACCGTCTCCTCA

VH3

GACGTCCAACCTGGTGCAGTCAGGGGCTGAAGTGAAAAAACCTGGGGCCTCAGTGAAGGTGTCCTGCAAGCTTCTGGCTACACCGCTACTAGGTACACGATGCACCTGGTAAGCAGGCACCTGGACAGGGTCTGGAATGGATTGGATACATTAACTCCTAGCCGTGGTTATACTAATAATACGCACAGAAAGTTGCAGGGCCGCGTCACAATGACTACAGACACTTCCACCAGCACAGCCCTACCTGCAAAATGAACAGCCTGAAAACTGAGGACACTGCAGTCTATTACTGTGCAAGATATTATGATGATCATTACTGCCTTGACTACTGAGGGCCAAAGGCACCACGGTCACCGTCTCCTCA

VH5

GACGTCCAACCTGGTGCAGTCAGGGGCTGAAGTGAAAAAACCTGGGGCCTCAGTGAAGGTGTCCTGCAAGCTTCTGGCTACACCTTTACTAGGTACACGATGCACCTGGTAAGCAGGCACCTGGACAGGGTCTGGAATGGATTGGATACATTAACTCCTAGCCGTGGTTATACTAATAATACGCACAGCGTCAAGGGCCGCTTCACAATCACTACAGACAAAATCCACCAGCACAGCCCTACATGGAACCTGAGCAGCCTGCGTTCTGAGGACACTGCAACCTATTACTGTGCAAGATATTATGATGATCATTACTGCCTTGACTACTGAGGGCCAAAGGCACCACGGTCACCGTCTCCTCA

Fig. 2 B (cont.)

VH7

GACGTCCAACCTGGTGAGTCAGGGGCTGAAGTGAAAAACCTGGGGCCTCAGTGAAGGTGTCTTGC
AAGGCTTCTGGCTACACCTTTACTAGGTACACGATGCACCTGGGTAAAGCAGGCACCTGGACAGGGT
CTGGAATGGATTGGATACATTAATCCTAGCCGTGGTTATACTAATTACAATCAGAAGTTCAAGGAC
CGGTCACAATCACTACAGACAAATCCACCAGCACAGCCTACATGGAACGTGAGCAGCCTGCCGTTCT
GAGGACACTGCAGTCTATTACTGTGCAAGATATTATGATGATCATTACTGCCCTTGACTACTGGGGC
CAAGGCACCACGGTCACCGTCTCCTCA

Fig. 2 B (cont.)

VL1

GACATTGATGACCCAGTCTCCATCTAGCCCTGTCTGCACTGTCTGGGGACCGTGTACCATCACC
TGCAGAGCCAGTCAAAGTGTAAAGTTACATGAAGTGTACCAAGCAGAAAGCCGGCAAGGCACCCAAA
AGATGGATTATGACACATCCAAAGTGGCTTCTGGAGTCCCTGCTCGCTTCAGTGGCAGTGGGTCT
GGGACCGACTACTCTCTCACAATCAACAGCTTGGAGGCTGAAGATGCTGCCACTTATTACTGCCAA
CAGTGGAGTAGTAACCCGCTCACGTTCCGTTGGCGGGACCAAGTGGAGATCAAA

VL2

GACATTGATGACCCAGTCTCCAGCAACTCTGTCTGTCTCCAGGGGAGCGTGCCACCCCTGAGC
TGCAGAGCCAGTCAAAGTGTAAAGTTACATGAAGTGTACCAAGCAGAAAGCCGGCAAGGCACCCAAA
AGATGGATTATGACACATCCAAAGTGGCTTCTGGAGTCCCTGCTCGCTTCAGTGGCAGTGGGTCT
GGGACCGACTACTCTCTCACAATCAACAGCTTGGAGGCTGAAGATGCTGCCACTTATTACTGCCAA
CAGTGGAGTAGTAACCCGCTCACGTTCCGTTGGCGGGACCAAGTGGAGATCAAA

VL3

GACATTGATGACCCAGTCTCCAGCAACTCTGTCTGTCTCCAGGGGAGCGTGCCACCCCTGACC
TGCAGAGCCAGTCAAAGTGTAAAGTTACATGAAGTGTACCAAGCAGAAAGCCGGCAAGGCACCCAAA
AGATGGATTATGACACATCCAAAGTGGCTTCTGGAGTCCCTGCTCGCTTCAGTGGCAGTGGGTCT
GGGACCGACTACTCTCTCACAATCAACAGCTTGGAGGCTGAAGATGCTGCCACTTATTACTGCCAA
CAGTGGAGTAGTAACCCGCTCACGTTCCGTTGGCGGGACCAAGTGGAGATCAAA

Fig. 2 C**vH CDR1**Wt anti-CD3
VH2, 3
VH5, 7GYTFTRYTMH
GYTATRYTMH
GYTFTRYTMH**vH CDR2**WT anti-CD3,
VH7
VH5
VH2, 3YINPSRGYTNYNQKFKD
YINPSRGYTNYADSVKG
YINPSRGYTNYAQKLQG**vH CDR3**WT anti-CD3,
VH2, 3, 5, 7

YYDDHYCLDY

vK CDR1WT anti-CD3,
VL3
VL1, 2RASSSVSYMN
RASQSVSYMN**vK CDR2**WT anti-CD3,
VL1, 2, 3

DTSKVAS

vK CDR3WT anti-CD3,
VL1, 2, 3

QQWSSNPLT

Fig. 2 D

vH CDR1WT anti-CD3 GGCTACACCTTTACTAGGTACACGATG
CACVH2,3 GGCTACACCGCTACTAGGTACACGATG
CACVH5,7 GGCTACACCTTTACTAGGTACACGATG
CAC**vH CDR2**WT anti-CD3,
VH7 TACATTAATCCTAGCCGTGGTTATACT
AATTACAATCAGAAGTTCAAGGACVH5 TACATTAATCCTAGCCGTGGTTATACT
AATTACGCAGACAGCGTCAAGGGCVH2,3 TACATTAATCCTAGCCGTGGTTATACT
AATTACGCACAGAAGTTGCAGGGC**VH CDR3**WT anti-CD3,
VH2, 3,
VH5, 7 TATTATGATGATCATTACTGCCTT
GACTAC

Fig. 2 D (cont.)**vK CDR1**

WT anti-CD3,

VL3

AGAGCCAGTTCAAGTGTAAGTTACATG
AAC

VL1, 2

AGAGCCAGTCAAAGTGTAAGTTACATG
AAC**vK CDR2**

WT anti-CD3,

VL1-3

ACACATCCAAAGTGGCTTCT

VK CDR3

WT anti-CD3,

VL1-3

CAACAGTGGAGTAGTAACCCGCTCAG

Figure 3**A) anti-CD3 (VH2/VL1)**

GACGTCCAACCTGGTGCAGTCAGGGGCTGAAGTGAAAAAACC
TGGGGCCTCAGTGAAGGTGTCCTGCAAGGCTTCTGGCTACA
CCGCTACTAGGTACACGATGCACTGGGTAAGGCAGGCACCT
GGACAGGGTCTGGAATGGATTGGATACATTAATCCTAGCCG
TGGTTATACTAATTACGCACAGAAGTTGCAGGGCCGCGTCA
CAATGACTACAGACACTTCCACCAGCACAGCCTACATGGAA
CTGAGCAGCCTGCGTTCTGAGGACACTGCAACCTATTACTG
TGCAAGATATTATGATGATCATTACTGCCTTGACTACTGGG
GCCAAGGCACCACGGTCACCGTCTCCTCAGGCGAAGGTACT
AGTACTGGTTCTGGTGGAAAGTGGAGGTTTCAGGTGGAGCAGA
CGACATTCAGATGACCCAGTCTCCATCTAGCCTGTCTGCAT
CTGTCGGGGACCGTGTCACCATCACCTGCAGAGCCAGTCAA
AGTGTAAGTTACATGAACTGGTACCAGCAGAAGCCGGGCAA
GGCACCCAAAAGATGGATTTATGACACATCCAAAGTGGCTT
CTGGAGTCCCTGCTCGCTTCAGTGGCAGTGGGTCTGGGACC
GACTACTCTCTCACAATCAACAGCTTGGAGGCTGAAGATGC
TGCCACTTATTACTGCCAACAGTGGAGTAGTAACCCGCTCA
CGTTCGGTGGCGGGACCAAGGTGGAGATCAAA

B) anti-CD3 (VH2/VL1)

DVQLVQSGAEVKKPGASVKVSCKASGYTATRYTMHWVRQAP
GQGLEWIGYINPSRGYTNYAQKLQGRVTMTTDTSTSTAYME
LSSLRSEDATYYCARYYDDHYCLDYWGQGTTVTVSSGEGT
STGSGGSGGSGGADDIQMTQSPSSLSASVGDRTITCRASQ
SVSYMNWYQQKPGKAPKRWIYDTSKVASGVPARFSGSGSGT
DYSLTINSLEAEDAATYYCQQWSSNPLTFGGGTKVEIK

Figure 3**C) anti-CD3 (VH2/VL2)**

GACGTCCAACCTGGTGCAGTCAGGGGCTGAAGTGAAAA-
AACCTGGGGCCTCAGTGAAGGTGTCCTG-
CAAGGCTTCTGGCTACACCGCTACTAGGTACACGATG-
CACTGGGTAAGGCAGGCACCTGGACAGGGTCTGGAATGGAT
TGGATACATTAATCCTAGCCGTGGTTATACTAATTACGCA-
CAGAAGTTGCAGGGCCGCGTCACAATGACTACAGA-
CACTTCCACCAGCACAGCCTACATGGAAGTGAAG-
CAGCCTGCGTTCTGAGGACACTGCAACCTATTACTGTGCAA
GATATTATGATGATCATTACTGCCTTGACTACTGGGGC-
CAAGGCACCACGGTCACCGTCTCCTCAGGCGAAGGTAC-
TAGTACTGGTTCTGGTGGAAAGTGGAGGTTTCAGGTGGAGCA-
GACGACATTGTACTGACCCAGTCTCCAGCAACTCTGTCTCT
GTCTCCAGGGGAGCGTGCCACCCTGAGCTGCAGAGCCAGT-
CAAAGTGTAAGTTACATGAACTGGTACCAGCA-
GAAGCCGGGCAAGGCACCCAAAAGATGGATTTATGACA-
CATCCAAAGTGGCTTCTGGAGTCCCTGCTCGCTTCAGTGGC
AGTGGGTCTGGGACCGACTACTCTCTCACAATCAA-
CAGCTTGGAGGCTGAAGATGCTGCCACTTATTACTGCCAA-
CAGTGGAGTAGTAACCCGCTCACGTTCCGGTGGCGGGAC-
CAAGGTGGAGATCAAA

D) anti-CD3 (VH2/VL2)

DVQLVQSGAEVKKPGASVKVSCKASGYTATRYTMHWVR-
QAPGQGLEWIGYINPSRGYTNV-
AQKLQGRVTMTTDTSTSTAYMELSSLRSEDATATYYCA-
RYYDDHYCLDYWGQGTIVTVSSGEGTSTGSGGSGGSGGADD
IVLTQSPATLSLSPGERATLSCRASQSVSYMNWYQQKPG-
KAPKRWIYDTSKVASGVPARFSGSGSGTDYSLTINSLEAE-
DAATYYCQQWSSNPLTFGGGTKEIK

Figure 3**E) anti-CD3 (VH2/VL3)**

GACGTCCAACCTGGTGCAGTCAGGGGCTGAAGTGAAAA-
AACCTGGGGCCTCAGTGAAGGTGTCCTG-
CAAGGCTTCTGGCTACACCGCTACTAGGTACACGATG-
CACTGGGTAAGGCAGGCACCTGGACAGGGTCTGGAATGGAT
TGGATACATTAATCCTAGCCGTGGTTATACTAATTACGCA-
CAGAAGTTGCAGGGCCGCGTCACAATGACTACAGA-
CACTTCCACCAGCACAGCCTACATGGAAGTGAAG-
CAGCCTGCGTTCTGAGGACACTGCAACCTATTACTGTGCAA
GATATTATGATGATCATTACTGCCTTGACTACTGGGGC-
CAAGGCACCACGGTCACCGTCTCCTCAGGCGAAGGTAC-
TAGTACTGGTTCTGGTGGAAAGTGGAGGTTTCAGGTGGAGCA-
GACGACATTGTACTGACCCAGTCTCCAGCAACTCTGTCTCT
GTCTCCAGGGGAGCGTGCCACCCTGACCTGCAGAGC-
CAGTTCAAGTGTAAGTTACATGAACTGGTACCAGCA-
GAAGCCGGGCAAGGCACCCAAAAGATGGATTTATGACA-
CATCCAAAGTGGCTTCTGGAGTCCCTGCTCGCTTCAGTGGC
AGTGGGTCTGGGACCGACTACTCTCTCACAATCAA-
CAGCTTGGAGGCTGAAGATGCTGCCACTTATTACTGCCAA-
CAGTGGAGTAGTAACCCGCTCACGTTCGGTGGCGGGAC-
CAAGGTGGAGATCAAA

F) anti-CD3 (VH2/VL3)

DVQLVQSGAEVKKPGASVKVSCKASGYTATRYTMHWVR-
QAPGQGLEWIGYINPSRGYTN-
AQKLQGRVTMTTDTSTSTAYMELSSLRSEDATYYCA-
RYYDDHYCLDYWGQGTIVTVSSGEGTSTGSGGSGGSGGADD
IVLTQSPATLSLSPGERATLTCRASSSVSYMNWYQQKPG-
KAPKRWIYDTSKVASGVPARFSGSGSGTDYSLTINSLEAE-
DAATYYCQQWSSNPLTFGGGGTKVEIK

Figure 4**A) anti-CD3 (VH3/VL1)**

GACGTCCAACCTGGTGCAGTCAGGGGCTGAAGTGAAAAAACC
TGGGGCCTCAGTGAAGGTGTCCTGCAAGGCTTCTGGCTACA
CCGCTACTAGGTACACGATGCACTGGGTAAGGCAGGCACCT
GGACAGGGTCTGGAATGGATTGGATACATTAATCCTAGCCG
TGGTTATACTAATTACGCACAGAAGTTGCAGGGGCCGCGTCA
CAATGACTACAGACACTTCCACCAGCACAGCCTACCTGCAA
ATGAACAGCCTGAAAACCTGAGGACACTGCAGTCTATTACTG
TGCAAGATATTATGATGATCATTACTGCCTTGACTACTGGG
GCCAAGGCACCACGGTCACCGTCTCCTCAGGCGAAGGTACT
AGTACTGGTTCTGGTGGAAAGTGGAGGTTTCAGGTGGAGCAGA
CGACATTCAGATGACCCAGTCTCCATCTAGCCTGTCTGCAT
CTGTCGGGGACCGTGTCACCATCACCTGCAGAGCCAGTCAA
AGTGTAAGTTACATGAACTGGTACCAGCAGAAGCCGGGCAA
GGCACCCAAAAGATGGATTTATGACACATCCAAAGTGGCTT
CTGGAGTCCCTGCTCGCTTCAGTGGCAGTGGGTCTGGGACC
GACTACTCTCTCACAATCAACAGCTTGGAGGCTGAAGATGC
TGCCACTTATTACTGCCAACAGTGGAGTAGTAACCCGCTCA
CGTTCGGTGGCGGGACCAAGGTGGAGATCAAA

B) anti-CD3 (VH3/VL1)

DVQLVQSGAEVKKPGASVKVSCKASGYTATRYTMHWVR-
QAPGQGLEWIGYINPSRGYTNY-
AQKLQGRVTMTTDTSTSTAYLQMNSLKTEDTAVYYCARYYDD-
HYCLDYWGQGTTVTVSSGEGTSTGSGGSGGSGGADDIQMTQSP
SSLSASVGDRVTITCRASQSVSYMNWYQQKPG-
KAPKRWIYDTSKVASGVPARFSGSGSGTDYSLTINSLEAE-
DAATYYCQQWSSNPLTFGGGGTKVEIK

Figure 4**C) anti-CD3 (VH3/VL2)**

GACGTCCAACCTGGTGCAGTCAGGGGCTGAAGTGAAAAAACC
TGGGGCCTCAGTGAAGGTGTCCTGCAAGGCTTCTGGCTACA
CCGCTACTAGGTACACGATGCACTGGGTAAGGCAGGCACCT
GGACAGGGTCTGGAATGGATTGGATACATTAATCCTAGCCG
TGGTTATACTAATTACGCACAGAAGTTGCAGGGCCGCGTCA
CAATGACTACAGACACTTCCACCAGCACAGCCTACCTGCAA
ATGAACAGCCTGAAAACCTGAGGACACTGCAGTCTATTACTG
TGCAAGATATTATGATGATCATTACTGCCTTGACTACTGGG
GCCAAGGCACCACGGTCACCGTCTCCTCAGGCGAAGGTACT
AGTACTGGTTCTGGTGGAAAGTGGAGGTTTCAGGTGGAGCAGA
CGACATTGTACTGACCCAGTCTCCAGCAACTCTGTCTCTGT
CTCCAGGGGAGCGTGCCACCCTGAGCTGCAGAGCCAGTCAA
AGTGTAAGTTACATGAACTGGTACCAGCAGAAGCCGGGCAA
GGCACCCAAAAGATGGATTTATGACACATCCAAAGTGGCTT
CTGGAGTCCCTGCTCGCTTCAGTGGCAGTGGGTCTGGGACC
GACTACTCTCTCACAATCAACAGCTTGGAGGCTGAAGATGC
TGCCACTTATTACTGCCAACAGTGGAGTAGTAACCCGCTCA
CGTTCGGTGGCGGGACCAAGGTGGAGATCAAA

D) anti-CD3 (VH3/VL2)

DVQLVQSGAEVKKPGASVKVSCKASGYTATRYTMHWVRQAP
GQGLEWIGYINPSRGYTNYAQKLQGRVTMTTDTSTSTAYLQ
MNSLKTEDTAVYYCARYYDDHYCLDYWGQGTTVTVSSGEGT
STGSGGSGGSGGADDIVLTQSPATLSLSPGERATLSCRASQ
SVSYMNWYQQKPGKAPKRWIYDTSKVASGVPARFSGSGSGT
DYSLTINSLEAEDAATYYCQQWSSNPLTFGGGTKVEIK

Figure 4**E) anti-CD3 (VH3/VL3)**

GACGTCCAACCTGGTGCAGTCAGGGGCTGAAGTGAAAA-
AACCTGGGGCCTCAGTGAAGGTGTCCTG-
CAAGGCTTCTGGCTACACCGCTACTAGGTACACGATG-
CACTGGGTAAGGCAGGCACCTGGACAGGGTCTGGAATGGAT
TGGATACATTAATCCTAGCCGTGGTTATACTAATTACGCA-
CAGAAGTTGCAGGGCCGCGTCACAATGACTACAGA-
CACTTCCACCAGCACAGCCTACCTGCAAATGAACAGCCT-
GAAAACCTGAGGACACTGCAGTCTATTACTGTGCAAGATATT
ATGATGATCATTACTGCCTTGACTACTGGGGCCAAGGCAC-
CACGGTCACCGTCTCCTCAGGCGAAGGTACTAG-
TACTGGTTCTGGTGGAAGTGGAGGTTTCAGGTGGAGCAGAC-
GACATTGTACTGACCCAGTCTCCAGCAACTCTGTCTCTGTC
TCCAGGGGAGCGTGCCACCCTGACCTGCAGAGCCAGTT-
CAAGTGTAAGTTACATGAACTGGTACCAGCAGAAGCCGGG-
CAAGGCACCCAAAAGATGGATTTATGACACATCCA-
AAGTGGCTTCTGGAGTCCCTGCTCGCTTCAGTGGCAGTGGG
TCTGGGACCGACTACTCTCTCACAATCAACAGCTTG-
GAGGCTGAAGATGCTGCCACTTATTACTGCCAACAGTG-
GAGTAGTAACCCGCTCACGTTCTGGTGGCGGGACCAAGGTG-
GAGATCAAA

F) anti-CD3 (VH3/VL3)

DVQLVQSGAEVKKPGASVKVSCKASGYTATRYTMHWVR-
QAPGQGLEWIGYINPSRGYTNV-
AQKLQGRVTMTTDTSTSTAYLQMNSLKTEDTAVYYCA-
RYYDDHYCLDYWGQGTTVTVSSGEGTSTGSGGSGGSGGADD
IVLTQSPATLSLSPGERATLTCRASSSVSYMNWYQQKPG-
KAPKRWIYDTSKVASGVPARFSGSGSGTDYSLTINSLEAE-
DAATYYCQQWSSNPLTFGGGTKEIK

Figure 5**A) CD3 (VH5/VL1)**

GACGTCCAACCTGGTGCAGTCAGGGGCTGAAGTGAAAAAACC
TGGGGCCTCAGTGAAGGTGTCCTGCAAGGCTTCTGGCTACA
CCTTTACTAGGTACACGATGCACTGGGTAAGGCAGGCACCT
GGACAGGGTCTGGAATGGATTGGATACATTAATCCTAGCCG
TGGTTATACTAATTACGCAGACAGCGTCAAGGGCCGCTTCA
CAATCACTACAGACAAATCCACCAGCACAGCCTACATGGAA
CTGAGCAGCCTGCGTTCTGAGGACACTGCAACCTATTACTG
TGCAAGATATTATGATGATCATTACTGCCTTGACTACTGGG
GCCAAGGCACCACGGTCACCGTCTCCTCAGGCGAAGGTACT
AGTACTGGTTCTGGTGGAAAGTGGAGGTTTCAGGTGGAGCAGA
CGACATTCAGATGACCCAGTCTCCATCTAGCCTGTCTGCAT
CTGTCGGGGGACCGTGTCACCATCACCTGCAGAGCCAGTCAA
AGTGTAAGTTACATGAACTGGTACCAGCAGAAGCCGGGCAA
GGCACCCAAAAGATGGATTTATGACACATCCAAAGTGGCTT
CTGGAGTCCCTGCTCGCTTCAGTGGCAGTGGGTCTGGGACC
GACTACTCTCTCACAATCAACAGCTTGGAGGCTGAAGATGC
TGCCACTTATTACTGCCAACAGTGGAGTAGTAACCCGCTCA
CGTTCGGTGGCGGGACCAAGGTGGAGATCAAA

B) CD3 (VH5/VL1)

DVQLVQSGAEVKKPGASVKVSCKASGYTFTRYTMHWVRQAP
GQGLEWIGYINPSRGYTNYADSVKGRFTITTDKSTSTAYME
LSSLRSEDATYYCARYYDDHYCLDYWGQGTTVTVSSGEGT
STGSGGSGGSGGADDIQMTQSPSSLSASVGDRTITCRASQ
SVSYMNWYQQKPGKAPKRWIYDTSKVASGVPARFSGSGSGT
DYSLTINSLEAEDAATYYCQQWSSNPLTFGGGTKVEIK

Figure 5**C) anti-CD3 (VH5/VL2)**

GACGTCCAACCTGGTGCAGTCAGGGGCTGAAGTGAAAAAACC
TGGGGCCTCAGTGAAGGTGTCCTGCAAGGCTTCTGGCTACA
CCTTTACTAGGTACACGATGCACTGGGTAAGGCAGGCACCT
GGACAGGGTCTGGAATGGATTGGATACATTAATCCTAGCCG
TGGTTATACTAATTACGCAGACAGCGTCAAGGGCCGCTTCA
CAATCACTACAGACAAATCCACCAGCACAGCCTACATGGAA
CTGAGCAGCCTGCGTTCTGAGGACACTGCAACCTATTACTG
TGCAAGATATTATGATGATCATTACTGCCTTGACTACTGGG
GCCAAGGCACCACGGTCACCGTCTCCTCAGGCGAAGGTACT
AGTACTGGTTCTGGTGGAAAGTGGAGGTTTCAGGTGGAGCAGA
CGACATTGTACTGACCCAGTCTCCAGCAACTCTGTCTCTGT
CTCCAGGGGAGCGTGCCACCCTGAGCTGCAGAGCCAGTCAA
AGTGTAAGTTACATGAACTGGTACCAGCAGAAGCCGGGCAA
GGCACCCAAAAGATGGATTTATGACACATCCAAAGTGGCTT
CTGGAGTCCCTGCTCGCTTCAGTGGCAGTGGGTCTGGGACC
GACTACTCTCTCACAATCAACAGCTTGGAGGCTGAAGATGC
TGCCACTTATTACTGCCAACAGTGGAGTAGTAACCCGCTCA
CGTTCGGTGGCGGGACCAAGGTGGAGATCAAA

D) anti-CD3 (VH5/VL2)

DVQLVQSGAEVKKPGASVKVSCKASGYTFTRYTMHWVRQAP
GQGLEWIGYINPSRGYTNYSVKGRTITTDKSTSTAYME
LSSLRSEDATYYCARYYDDHYCLDYWGQGTTVTVSSGEGT
STGSGGSGGSGGADDIVLTQSPATLSLSPGERATLSCRASQ
SVSYMNWYQQKPGKAPKRWIYDTSKVASGVPARFSGSGSGT
DYSLTINSLEAEDAATYYCQQWSSNPLTFGGGTKVEIK

Figure 5**E) anti-CD3 (VH5/VL3)**

GACGTCCAACCTGGTGCAGTCAGGGGCTGAAGTGAAAA-
AACCTGGGGCCTCAGTGAAGGTGTCCTG-
CAAGGCTTCTGGCTACACCTTTACTAGGTACACGATG-
CACTGGGTAAGGCAGGCACCTGGACAGGGTCTGGAATGGAT
TGGATACATTAATCCTAGCCGTGGTTATACTAATTACG-
CAGACAGCGTCAAGGGCCGCTTCACAATCACTACAGACA-
AATCCACCAGCACAGCCTACATGGAAGTGAAG-
CAGCCTGCGTTCTGAGGACACTGCAACCTATTACTGTGCAA
GATATTATGATGATCATTACTGCCTTGACTACTGGGGC-
CAAGGCACCACGGTCACCGTCTCCTCAGGCGAAGGTAC-
TAGTACTGGTTCTGGTGGAAAGTGGAGGTTTCAGGTGGAG-
CAGACGACATTGTACTGACCCAGTCTCCAGCAACTCTGTCT
CTGTCTCCAGGGGAGCGTGCCACCCTGACCTGCAGAGC-
CAGTTCAAGTGTAAGTTACATGAACTGGTACCAGCA-
GAAGCCGGGCAAGGCACCCAAAAGATGGATTTATGACA-
CATCCAAAGTGGCTTCTGGAGTCCCTGCTCGCTTCAGTGGC
AGTGGGTCTGGGACCGACTACTCTCTCACAATCAA-
CAGCTTGGAGGCTGAAGATGCTGCCACTTATTACTGC-
CAACAGTGGAGTAGTAACCCGCTCACGTTCCGGTGGCGG-
GACCAAGGTGGAGATCAAA

F) anti-CD3 (VH5/VL3)

DVQLVQSGAEVKKPGASVKVSCKASGYTFTRYTMHWVR-
QAPGQGLEWIGYINPSRGYTN-
ADSVKGRFTITTDKSTSTAYMELSSLRSEDATYYCA-
RYYDDHYCLDYWGQGTIVTVSSGEGTSTGSGGSGGSGGADD
IVLTQSPATLSLSPGERATLTCRASSSVSYMNWYQQKPG-
KAPKRWIYDTSKVASGVPARFSGSGSGTDYSLTINSLEAE-
DAATYYCQQWSSNPLTFGGGTKVEIK

Figure 6**A) anti-CD3 (VH7/VL1)**

GACGTCCAACCTGGTGCAGTCAGGGGCTGAAGTGAAAAAACC
TGGGGCCTCAGTGAAGGTGTCCTGCAAGGCTTCTGGCTACA
CCTTTACTAGGTACACGATGCACTGGGTAAGGCAGGCACCT
GGACAGGGTCTGGAATGGATTGGATACATTAATCCTAGCCG
TGGTTATACTAATTACAATCAGAAGTTCAAGGACCGCGTCA
CAATCACTACAGACAAATCCACCAGCACAGCCTACATGGAA
CTGAGCAGCCTGCGTTCTGAGGACACTGCAGTCTATTACTG
TGCAAGATATTATGATGATCATTACTGCCTTGACTACTGGG
GCCAAGGCACCACGGTCACCGTCTCCTCAGGCGAAGGTACT
AGTACTGGTTCTGGTGGAAAGTGGAGGTTCAAGGTGGAGCAGA
CGACATTCAGATGACCCAGTCTCCATCTAGCCTGTCTGCAT
CTGTCGGGGACCGTGTCACCATCACCTGCAGAGCCAGTCAA
AGTGTAAGTTACATGAACCTGGTACCAGCAGAAGCCGGGCAA
GGCACCCAAAAGATGGATTTATGACACATCCAAAGTGGCTT
CTGGAGTCCCTGCTCGCTTCAGTGGCAGTGGGTCTGGGACC
GACTACTCTCTCACAATCAACAGCTTGGAGGCTGAAGATGC
TGCCACTTATTACTGCCAACAGTGGAGTAGTAACCCGCTCA
CGTTCGGTGGCGGGACCAAGGTGGAGATCAAA

B) anti-CD3 (VH7/VL1)

DVQLVQSGAEVKKPGASVKVSCKASGYTFTRYTMHWVR-
QAPGQGLEWIGYINPSRGYT-
NYNQKFKDRVITITDKSTSTAYMELSSLRSED TAVYYCA-
RYYDDHYCLDYWGQGT VTVVSSGEGTSTGSGGSGGSGGADD
IQMTQSPSSLSASVGDRTITCRASQSVSYMNWYQQKPG-
KAPKRWIYDTSKVASGVPARFSGSGSGTDYSLTINSLEAE-
DAATYYCQQWSSNPLTFGGG TKVEIK

Figure 6**C) anti-CD3 (VH7/VL2)**

GACGTCCAACCTGGTGCAGTCAGGGGCTGAAGTGAAAAAACC
TGGGGCCTCAGTGAAGGTGTCCTGCAAGGCTTCTGGCTACA
CCTTTACTAGGTACACGATGCACTGGGTAAGGCAGGCACCT
GGACAGGGTCTGGAATGGATTGGATACATTAATCCTAGCCG
TGGTTATACTAATTACAATCAGAAGTTCAAGGACCGCGTCA
CAATCACTACAGACAAATCCACCAGCACAGCCTACATGGAA
CTGAGCAGCCTGCGTTCTGAGGACACTGCAGTCTATTACTG
TGCAAGATATTATGATGATCATTACTGCCTTGACTACTGGG
GCCAAGGCACCACGGTCACCGTCTCCTCAGGCGAAGGTACT
AGTACTGGTTCTGGTGGAAAGTGGAGGTTTCAGGTGGAGCAGA
CGACATTGTACTGACCCAGTCTCCAGCAACTCTGTCTCTGT
CTCCAGGGGAGCGTGCCACCCTGAGCTGCAGAGCCAGTCAA
AGTGTAAGTTACATGAACTGGTACCAGCAGAAGCCGGGCAA
GGCACCCAAAAGATGGATTTATGACACATCCAAAGTGGCTT
CTGGAGTCCCTGCTCGCTTCAGTGGCAGTGGGTCTGGGACC
GACTACTCTCTCACAATCAACAGCTTGGAGGCTGAAGATGC
TGCCACTTATTACTGCCAACAGTGGAGTAGTAACCCGCTCA
CGTTCGGTGGCGGGACCAAGGTGGAGATCAAA

D) anti-CD3 (VH7/VL2)

DVQLVQSGAEVKKPGASVKVSCKASGYTFTRYTMHWVR-
QAPGQGLEWIGYINPSRGYT-
NYNQKFKDRVITITDKSTSTAYMELSSLRSED TAVYYCA-
RYYDDHYCLDYWGQGTTVTVSSGEGTSTGSGGSGGSGGADD
IVLTQSPATLSLSPGERATLSCRASQSVSYMNWYQQKPG-
KAPKRWIYDTSKVASGVPARFSGSGSGTDYSLTINSLEAE-
DAATYYCQQWSSNPLTFGGGGTKVEIK

Figure 6**E) anti-CD3 (VH7/VL3)**

GACGTCCAACCTGGTGCAGTCAGGGGCTGAAGTGAAAA-
AACCTGGGGCCTCAGTGAAGGTGTCCTG-
CAAGGCTTCTGGCTACACCTTTACTAGGTACACGATG-
CACTGGGTAAGGCAGGCACCTGGACAGGGTCTGGAATGGAT
TGGATACATTAATCCTAGCCGTGGTTATACTAATTACAAT-
CAGAAGTTCAAGGACCGCGTCACAATCACTACAGACA-
AATCCACCAGCACAGCCTACATGGAAGTGAAG-
CAGCCTGCGTTCTGAGGACACTGCAGTCTATTACTGTGCAA
GATATTATGATGATCATTACTGCCTTGACTACTGGGGC-
CAAGGCACCACGGTCACCGTCTCCTCAGGCGAAGGTAC-
TAGTACTGGTTCTGGTGGAAAGTGGAGGTTTCAGGTGGAGCA-
GACGACATTGTACTGACCCAGTCTCCAGCAACTCTGTCTCT
GTCTCCAGGGGAGCGTGCCACCCTGACCTGCAGAGC-
CAGTTCAAGTGTAAGTTACATGAACTGGTACCAGCA-
GAAGCCGGGCAAGGCACCCAAAAGATGGATTTATGACA-
CATCCAAAGTGGCTTCTGGAGTCCCTGCTCGCTTCAGTGGC
AGTGGGTCTGGGACCGACTACTCTCTCACAATCAA-
CAGCTTGGAGGCTGAAGATGCTGCCACTTATTACTGCCAA-
CAGTGGAGTAGTAACCCGCTCACGTTCCGGTGGCGGGAC-
CAAGGTGGAGATCAAA

F) anti-CD3 (VH7/VL3)

DVQLVQSGAEVKKPGASVKVSCKASGYTFTRYTMHWVR-
QAPGQGLEWIGYINPSRGYT-
NYNQKFKDRVITITDKSTSTAYMELSSLRSEDNAVYYCA-
RYYDDHYCLDYWGQGTITVTVSSGEGTSTGSGGSGGSGGADD
IVLTQSPATLSLSPGERATLTCRASSSVSYMNWYQQKPG-
KAPKRWIYDTSKVASGVPARFSGSGSGTDYSLTINSLEAE-
DAATYYCQQWSSNPLTFGGGGTKVEIK

Figure 7A

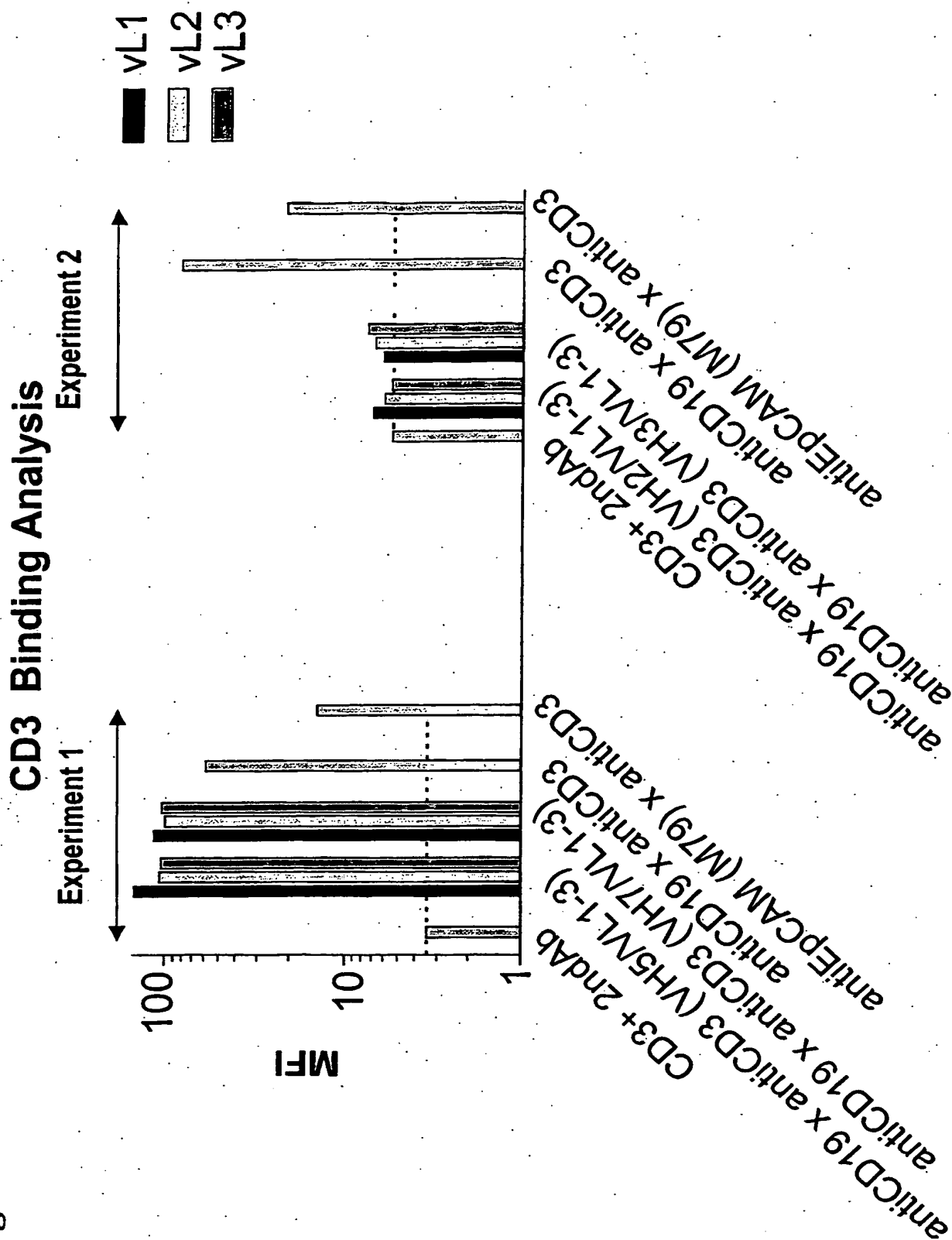


Figure 7B

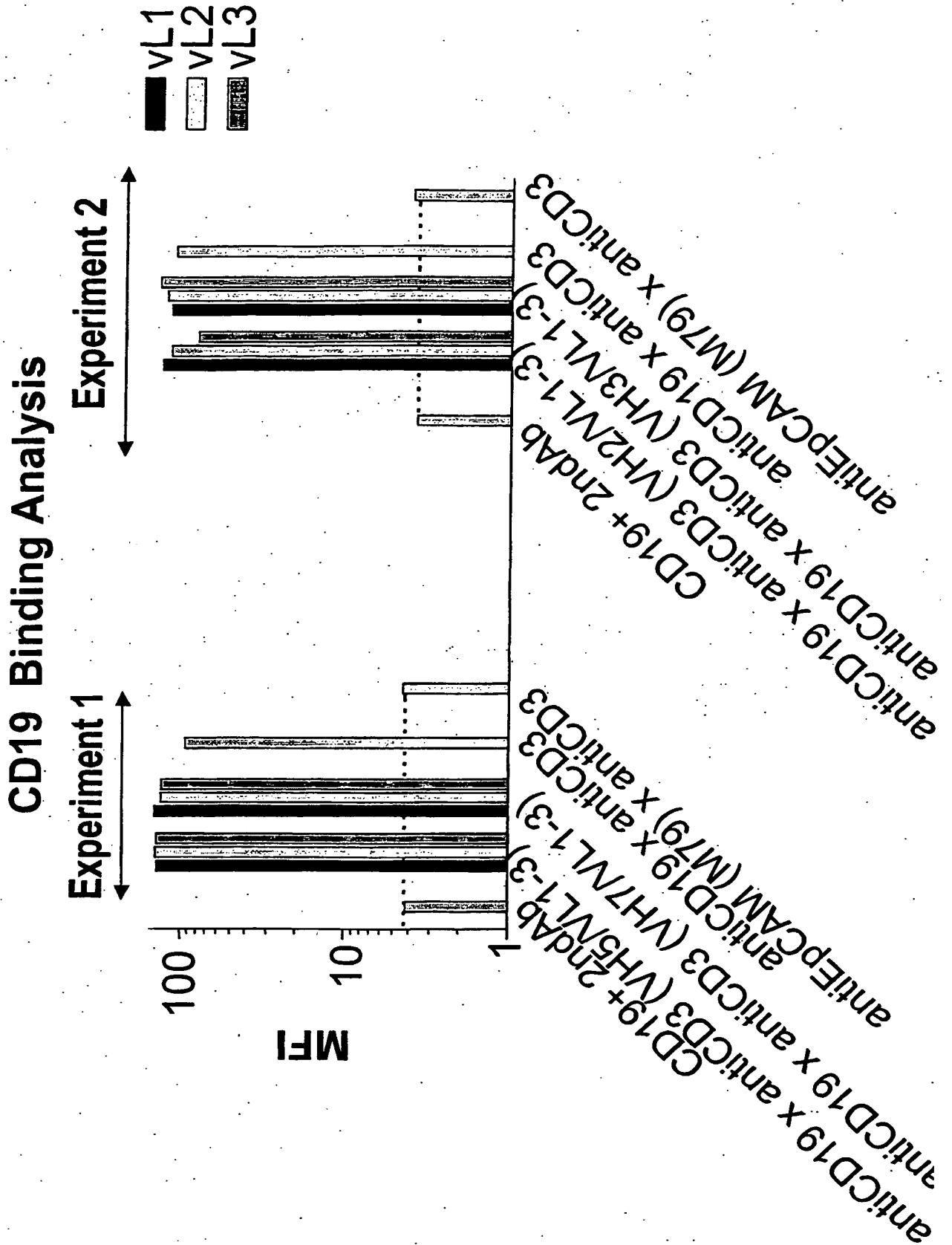


Figure 8

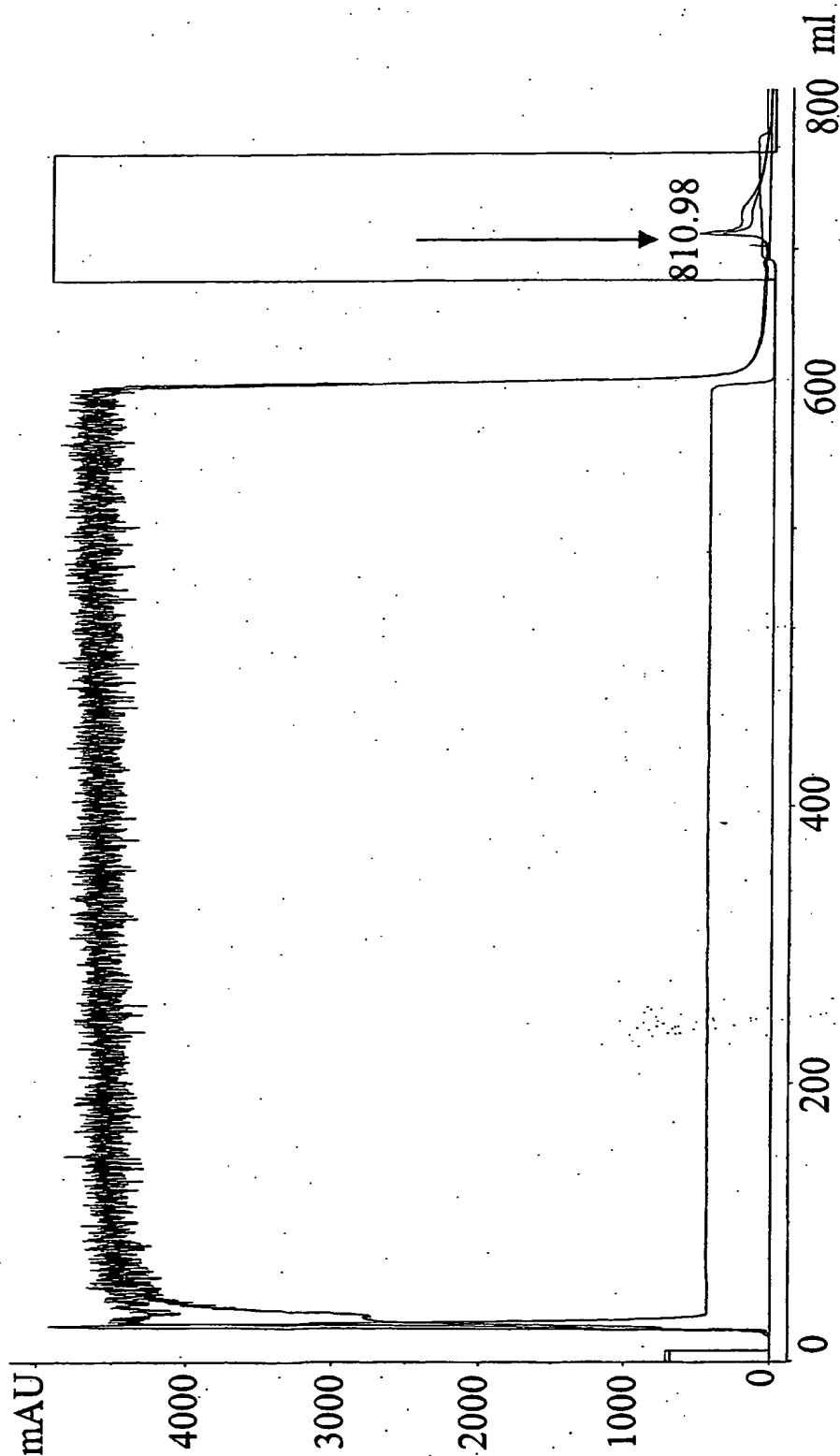


Figure 9



Figure 10

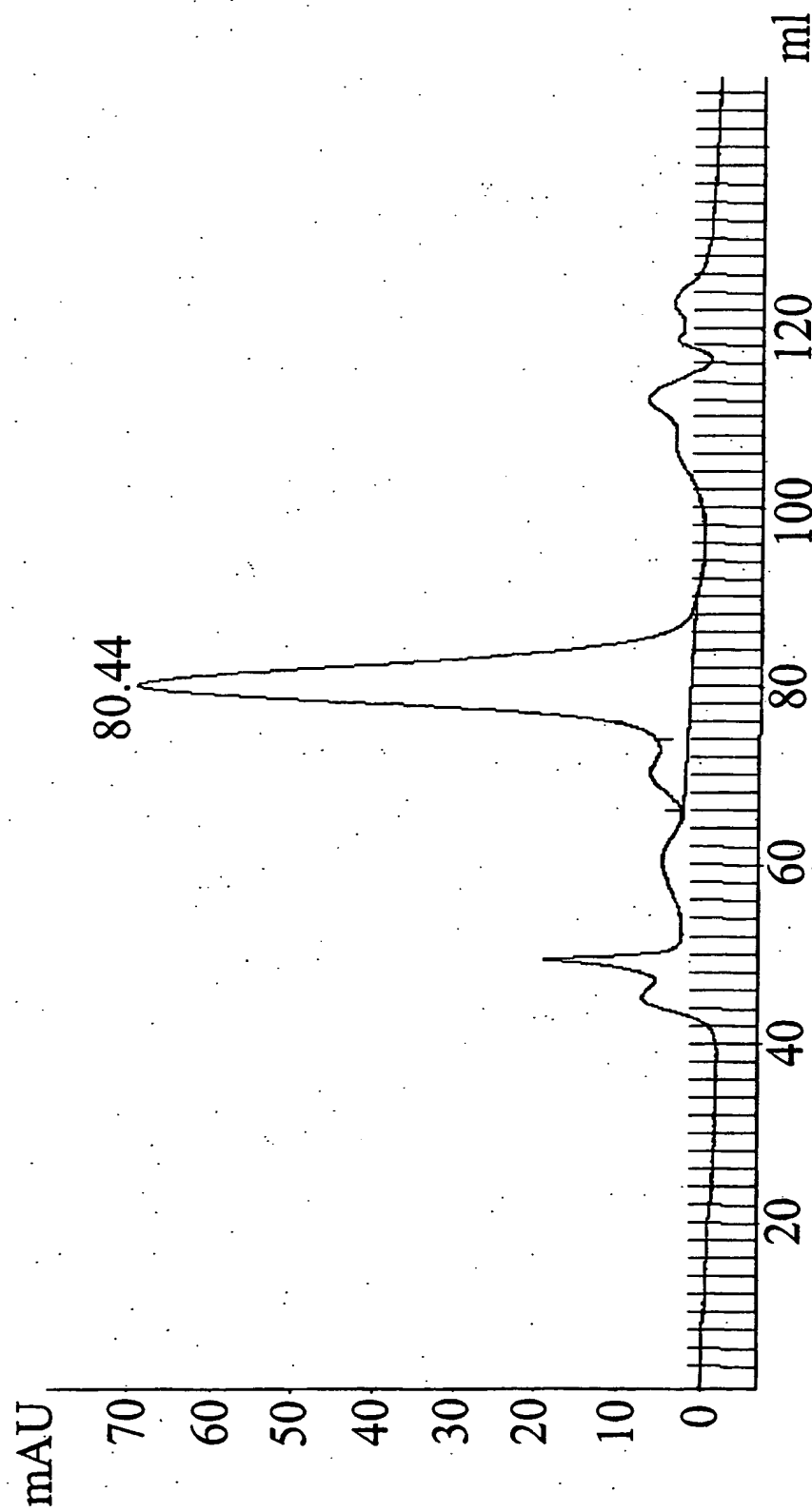
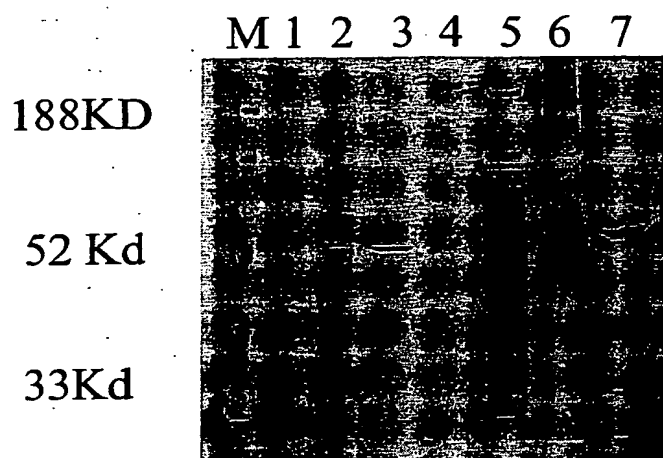


Figure 11

A)



B)

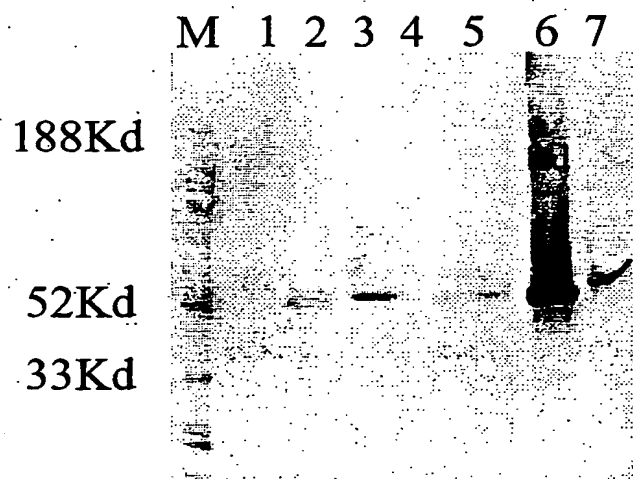


Figure 12A

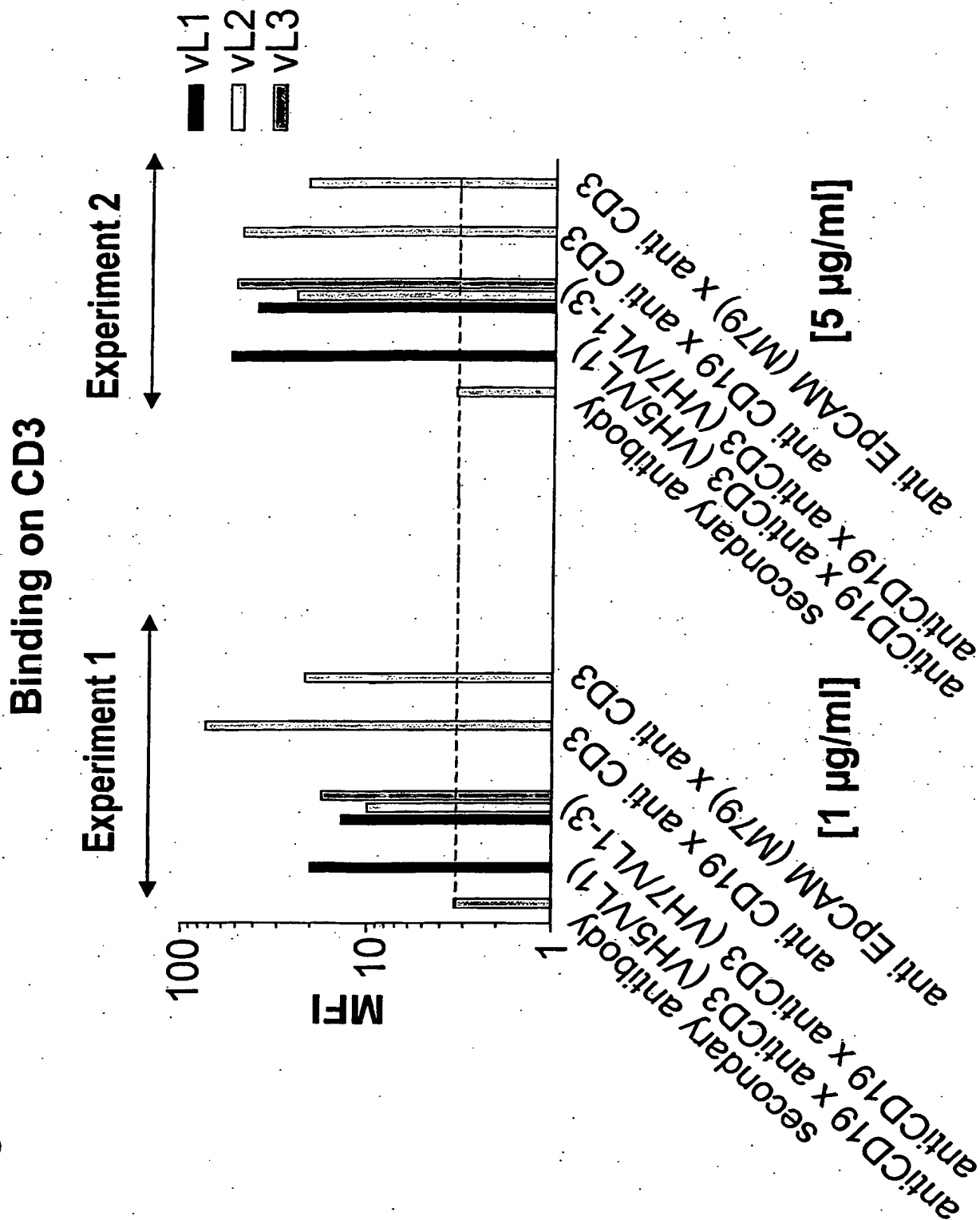


Figure 12B

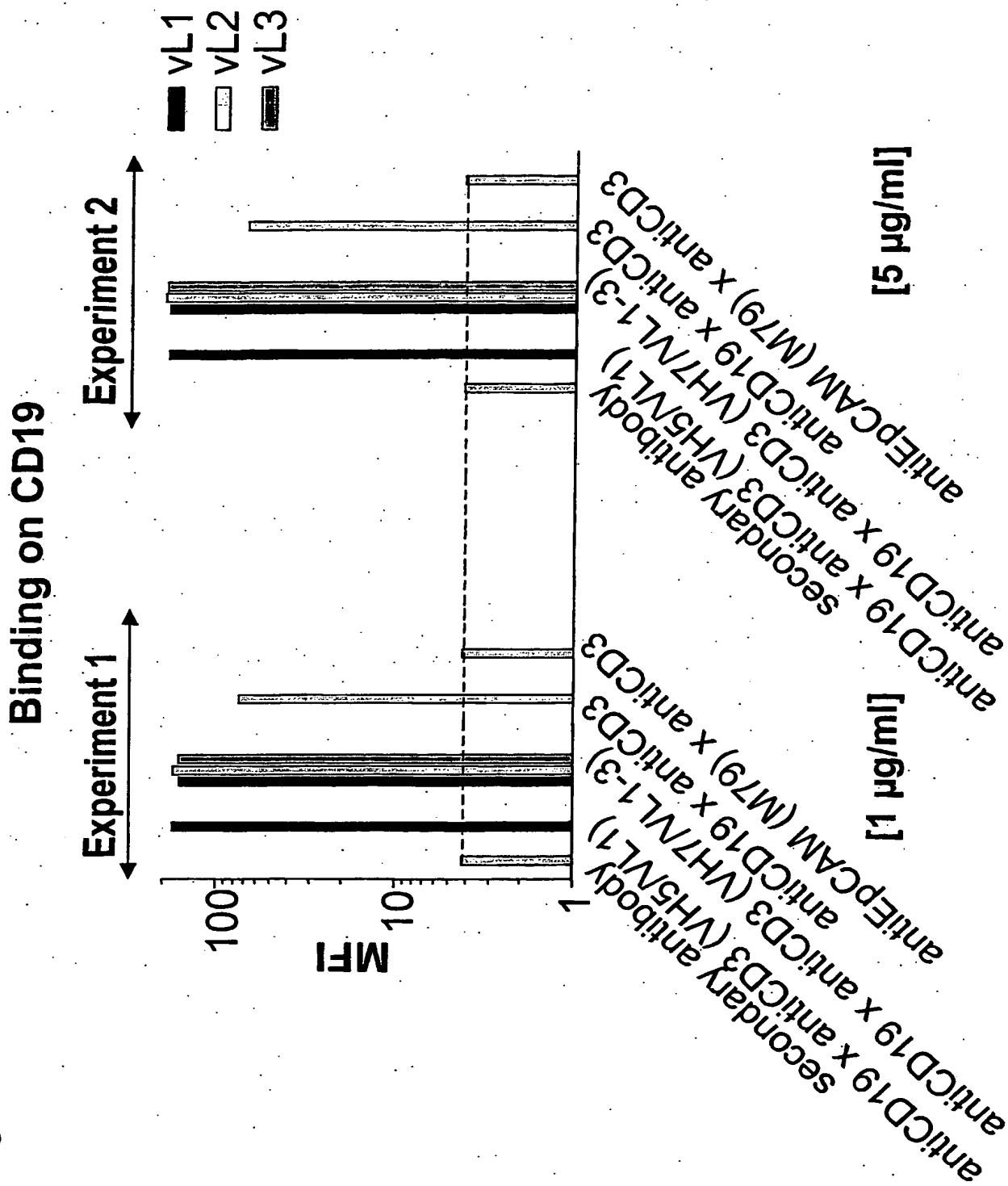


Figure 13

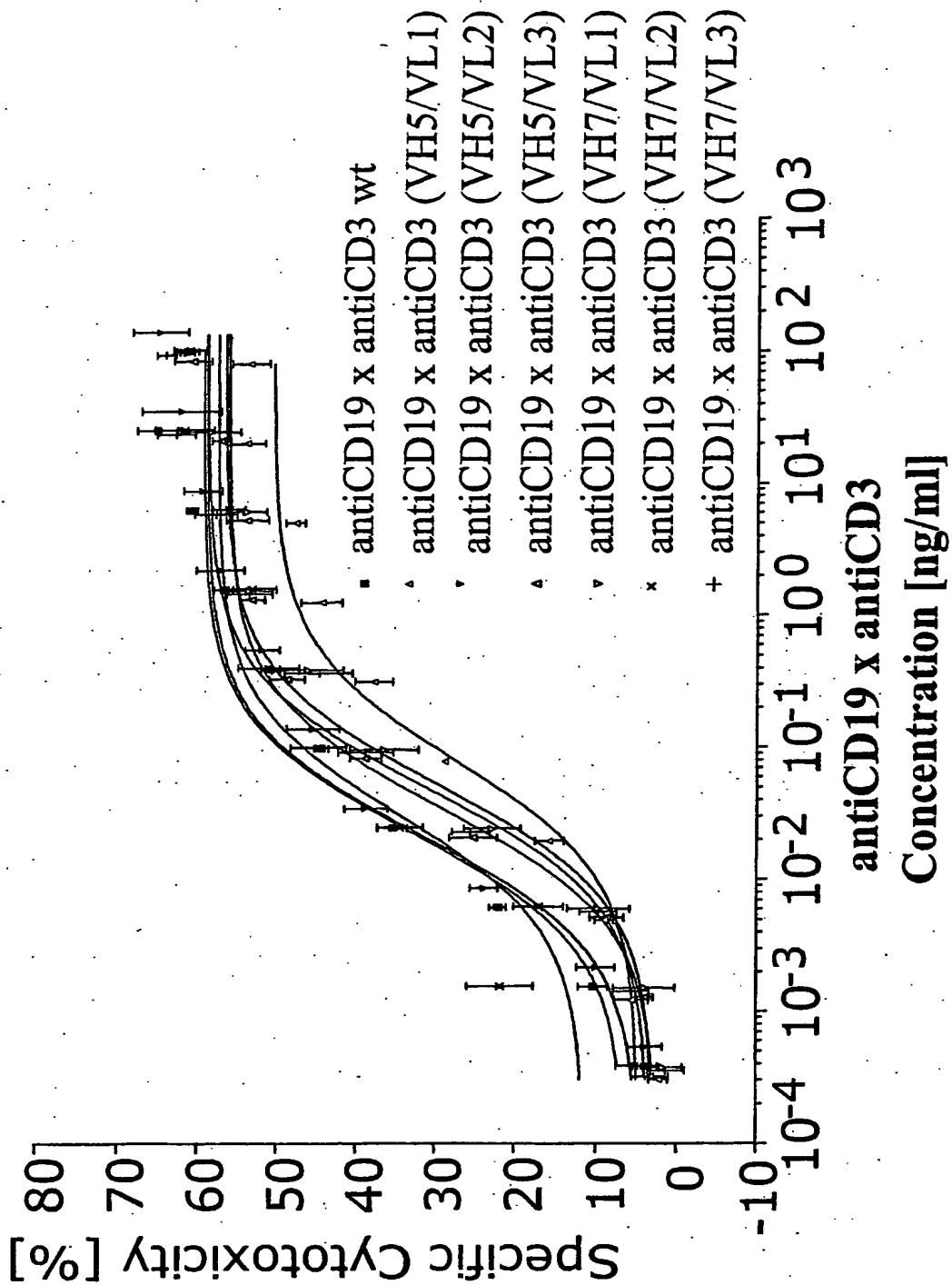


Figure 14

	FR1	CDR1	FR2	CDR2
nondeimmunized				
anti-CD3	DIKLQSGAELARPGASVKMSCKTSGYTF	TRYTMHWVKQRPQGQGLEWIGYIN	PSRGYTNYNQKFKD	
anti-CD3 VH5	DVQLVQSGAEVKKPGASVKVSKASGYTF	TRYTMHWVRQAPGQGLEWIGYIN	PSRGYTNYADSVKG	
anti-CD3 VH7	DVQLVQSGAEVKKPGASVKVSKASGYTF	TRYTMHWVRQAPGQGLEWIGYIN	PSRGYTNYNQKFKD	
anti-CD3 VH2	DVQLVQSGAEVKKPGASVKVSKASGYTAT	TRYTMHWVRQAPGQGLEWIGYIN	PSRGYTNYAQKLQG	
anti-CD3 VH3	DVQLVQSGAEVKKPGASVKVSKASGYTAT	TRYTMHWVRQAPGQGLEWIGYIN	PSRGYTNYAQKLQG	
anti-CD3	KATLTDDKSSSTAYMQLSSLTSEDSAVYYCARYDD	HYCLDYWGQGTTLTVSS		
anti-CD3 VH5	RFTITTDKSTSTAYMELSSLRSEDATYYCARYDD	HYCLDYWGQGTTLTVSS		
anti-CD3 VH7	RVTITTDKSTSTAYMELSSLRSEDATYYCARYDD	HYCLDYWGQGTTLTVSS		
anti-CD3 VH2	RVTMTTDTSTSTAYMELSSLRSEDATYYCARYDD	HYCLDYWGQGTTLTVSS		
anti-CD3 VH3	RVTMTTDTSTSTAYLQMNSLKTEDTAVYYCARYDD	HYCLDYWGQGTTLTVSS		
nondeimmunized				
anti-CD3	KATLTDDKSSSTAYMQLSSLTSEDSAVYYCARYDD	HYCLDYWGQGTTLTVSS		
anti-CD3 VH5	RFTITTDKSTSTAYMELSSLRSEDATYYCARYDD	HYCLDYWGQGTTLTVSS		
anti-CD3 VH7	RVTITTDKSTSTAYMELSSLRSEDATYYCARYDD	HYCLDYWGQGTTLTVSS		
anti-CD3 VH2	RVTMTTDTSTSTAYMELSSLRSEDATYYCARYDD	HYCLDYWGQGTTLTVSS		
anti-CD3 VH3	RVTMTTDTSTSTAYLQMNSLKTEDTAVYYCARYDD	HYCLDYWGQGTTLTVSS		

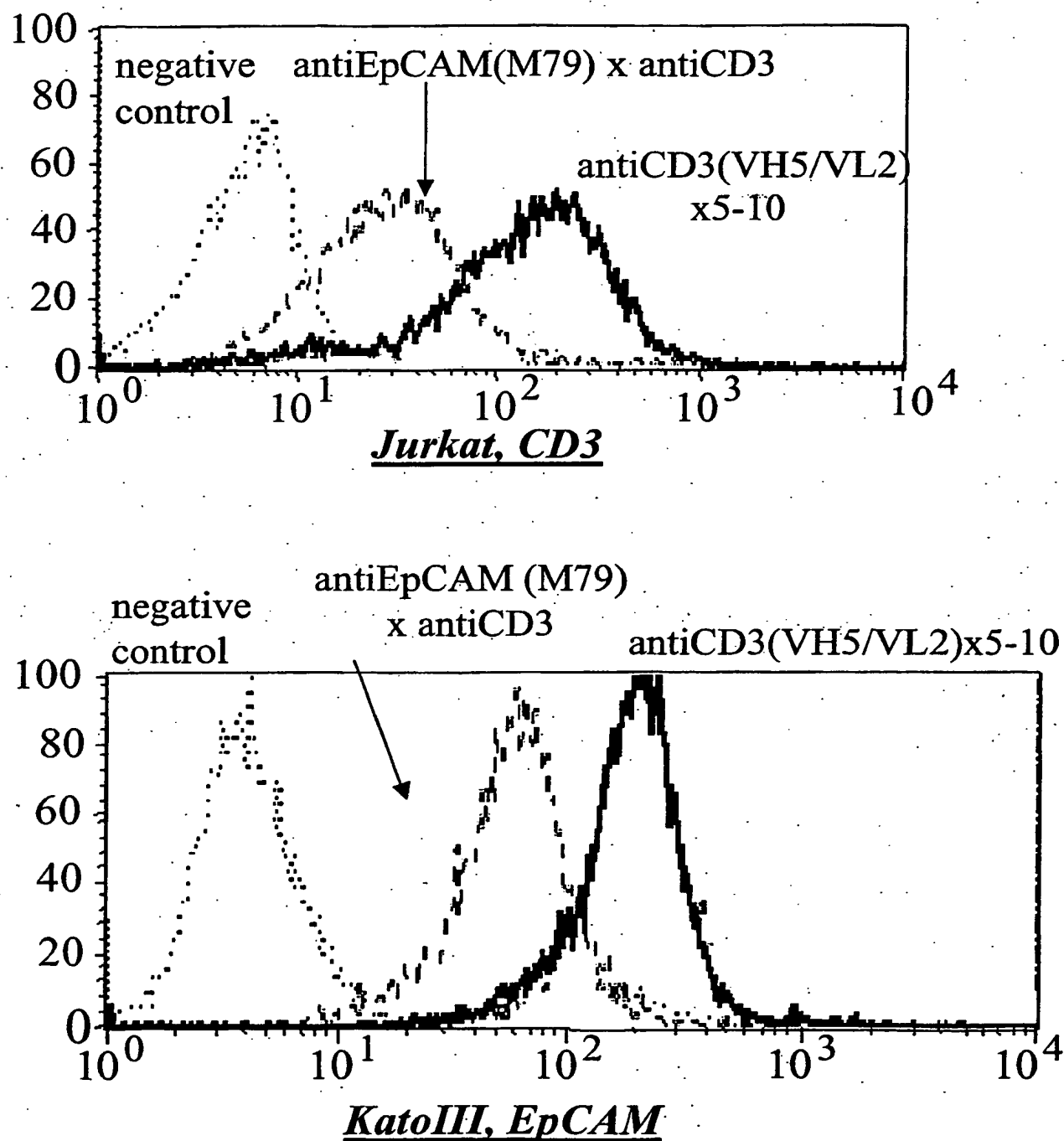
Figure 15 A**antiCD3(VH5/VL2) x 5-10 (SEQ ID NO: 37)**

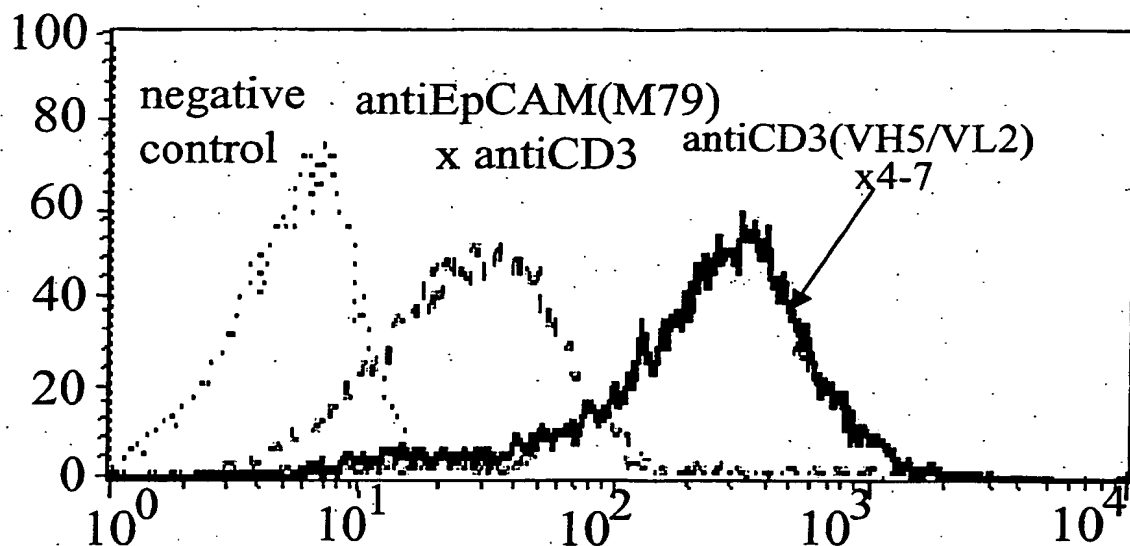
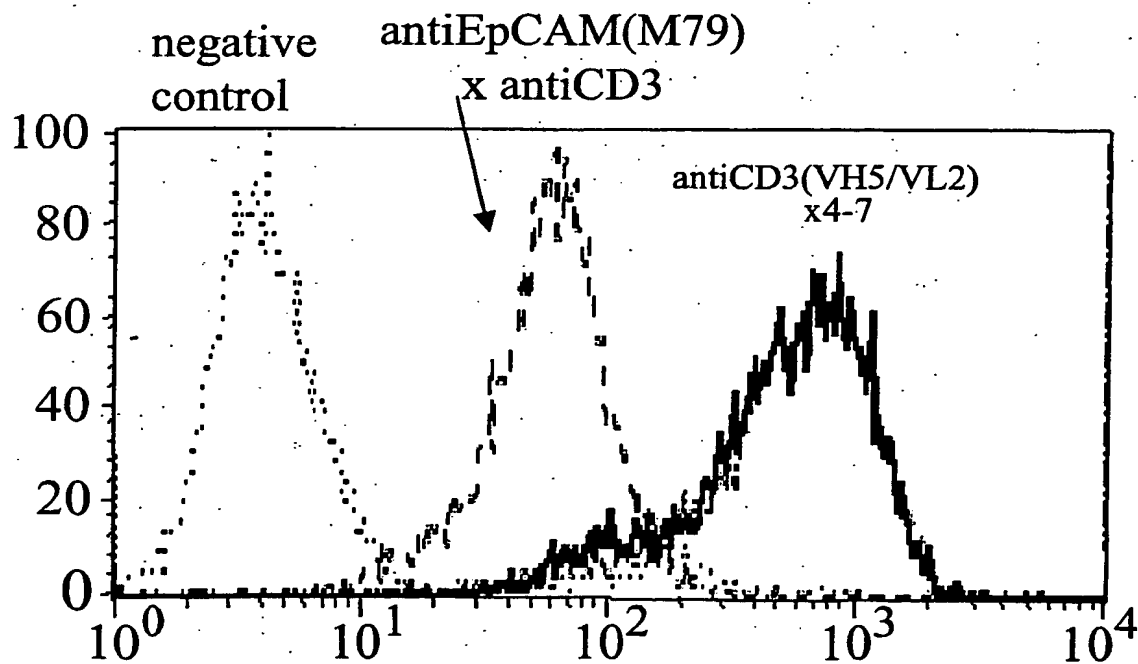
Figure 15B**antiCD3(VH5/VL2) x 4-7 (SEQ ID NO:33)****Jurkat, CD3****KatoIII, EpCAM**

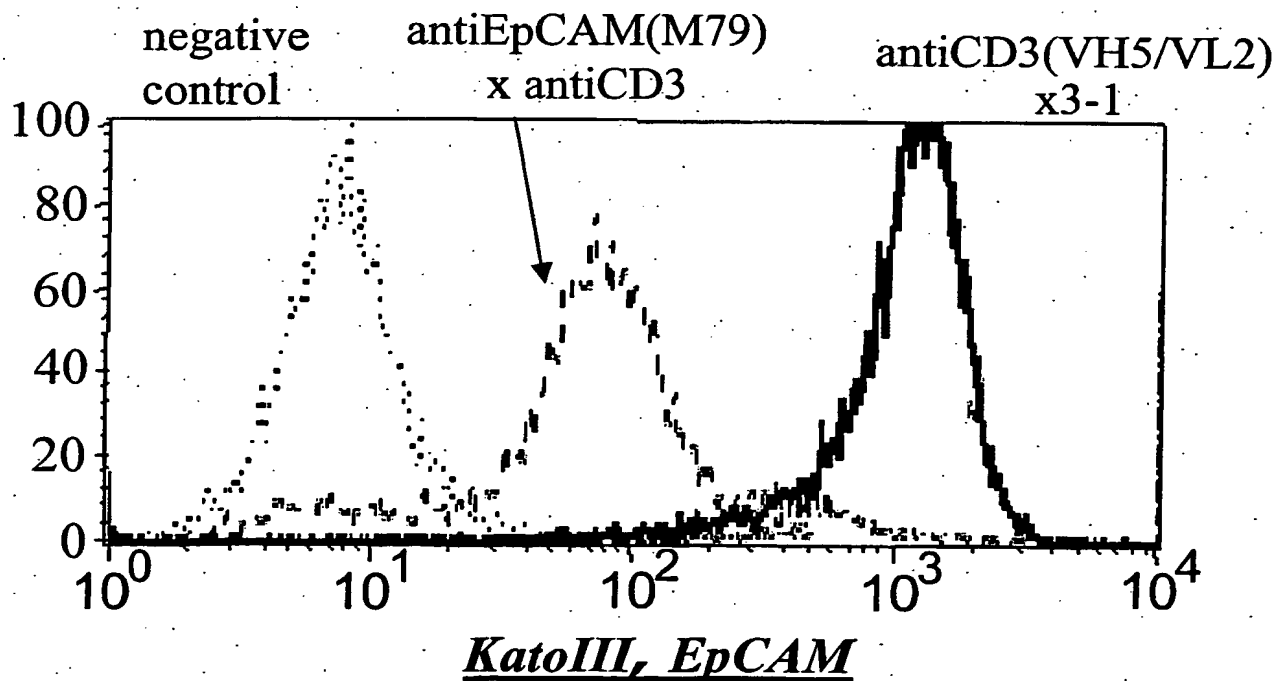
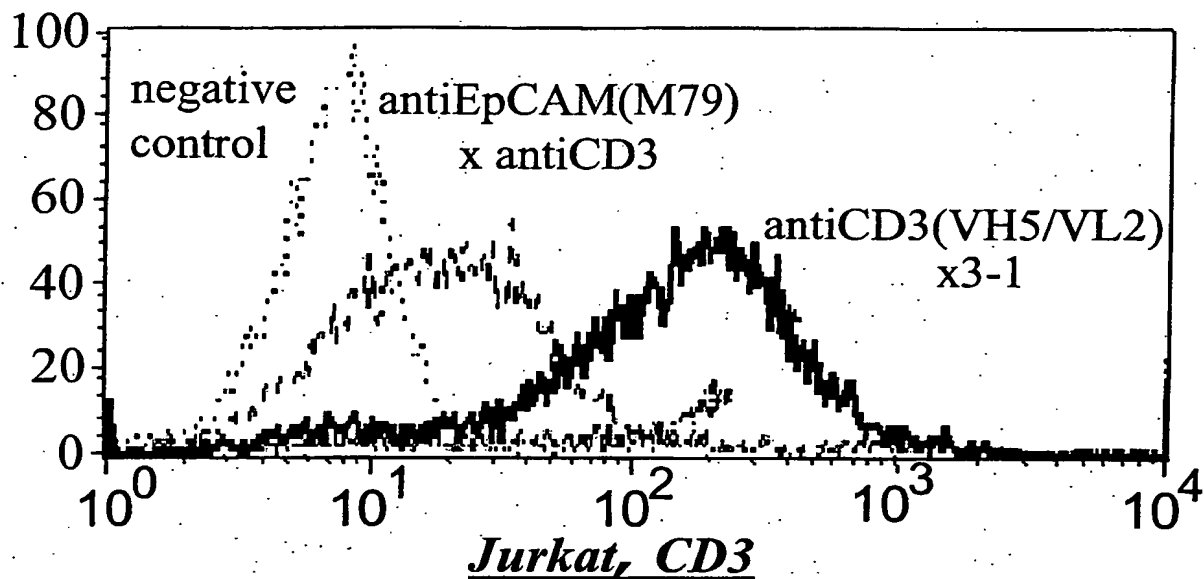
Figure 15C**antiCD3(VH5/VL2) x 3-1 (SEQ ID NO:31)**

Figure 15 D

**antiCD3(VH5/VL2) x 4-7 VL-VH
(SEQ ID NO: 35)**

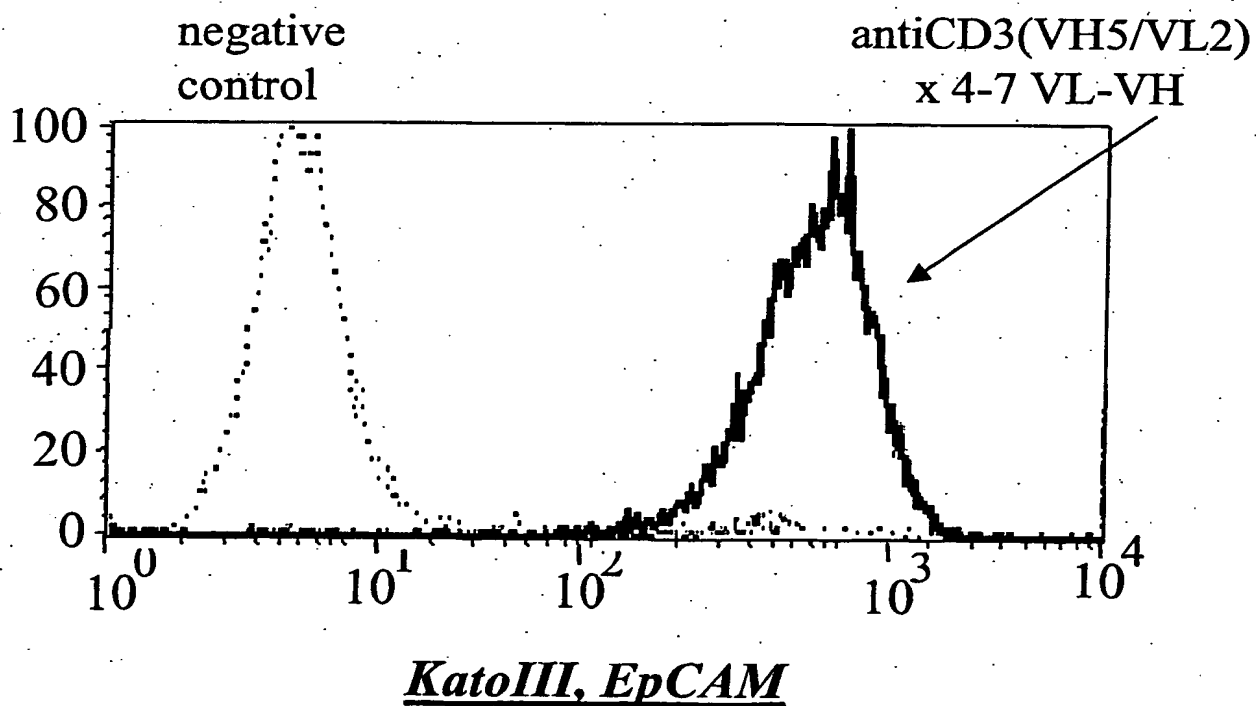
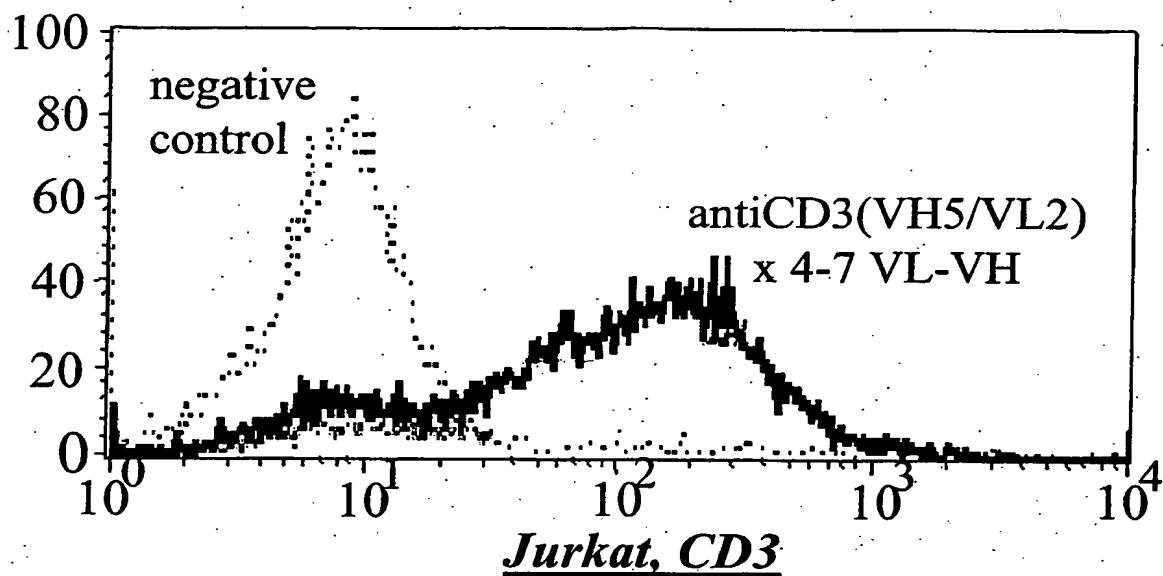


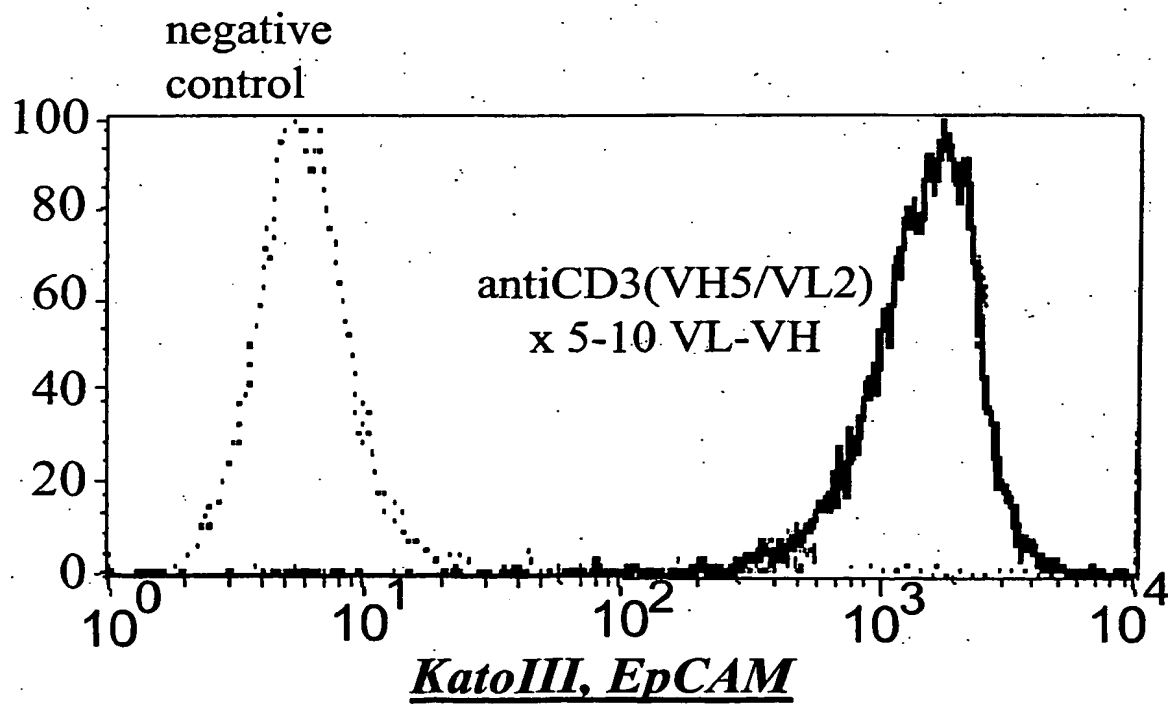
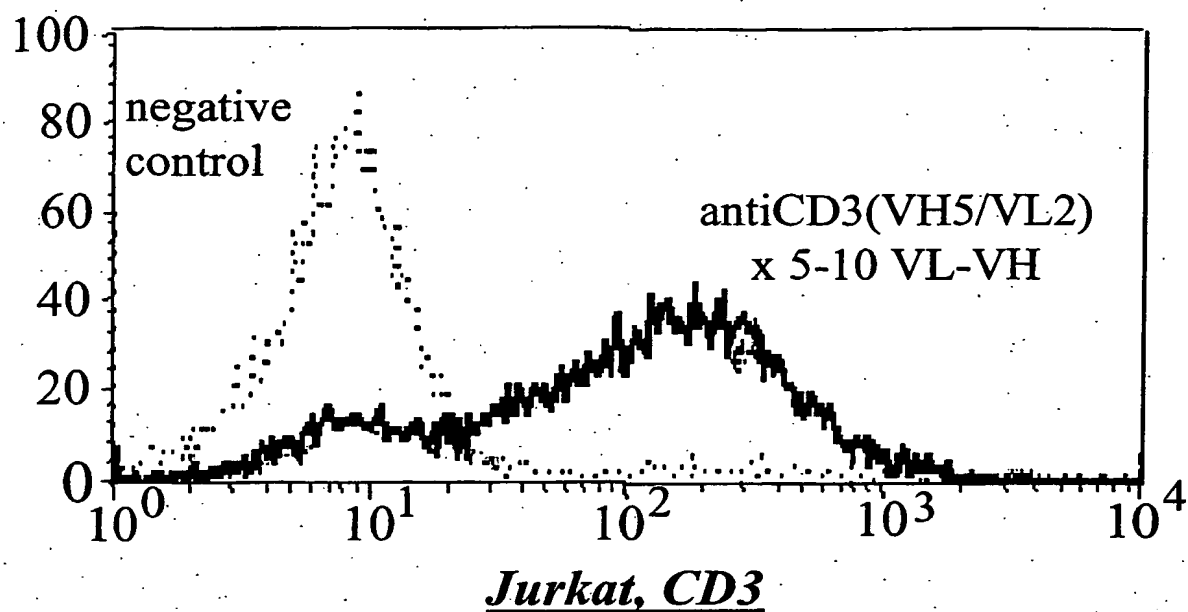
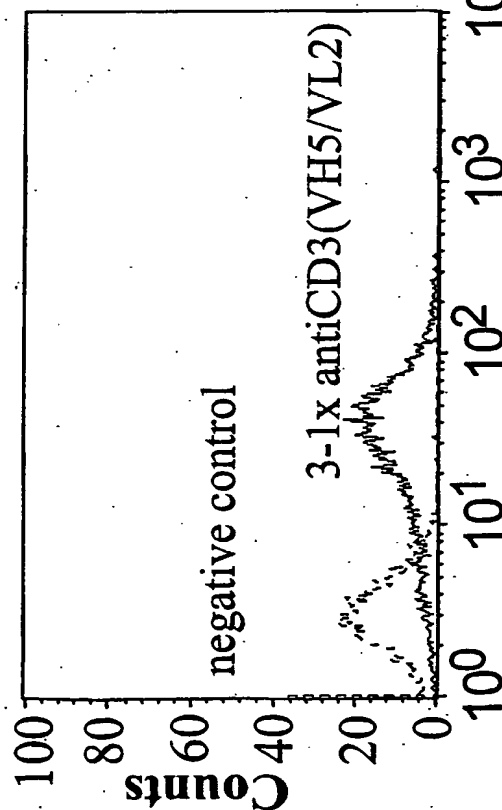
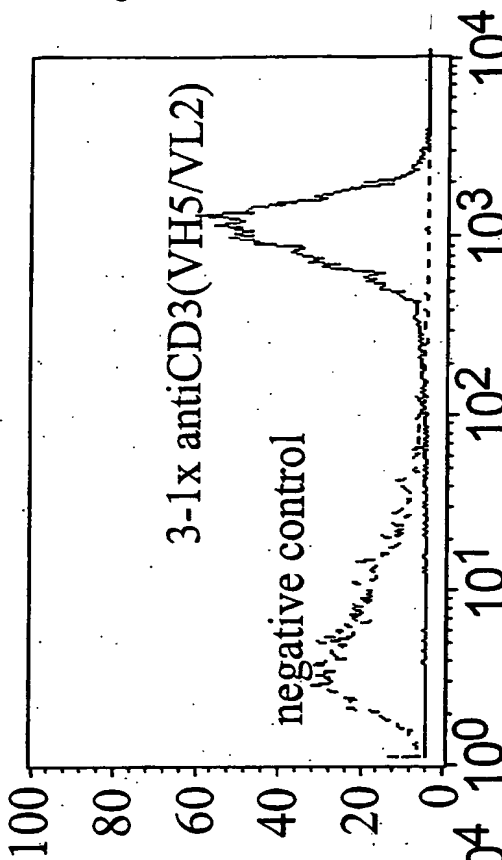
Figure 15 E**antiCD3(VH5/VL2) x 5-10 VL-VH
(SEQ ID NO:39)**

Figure 16 A

CD3 Binding (Jurkat cells)

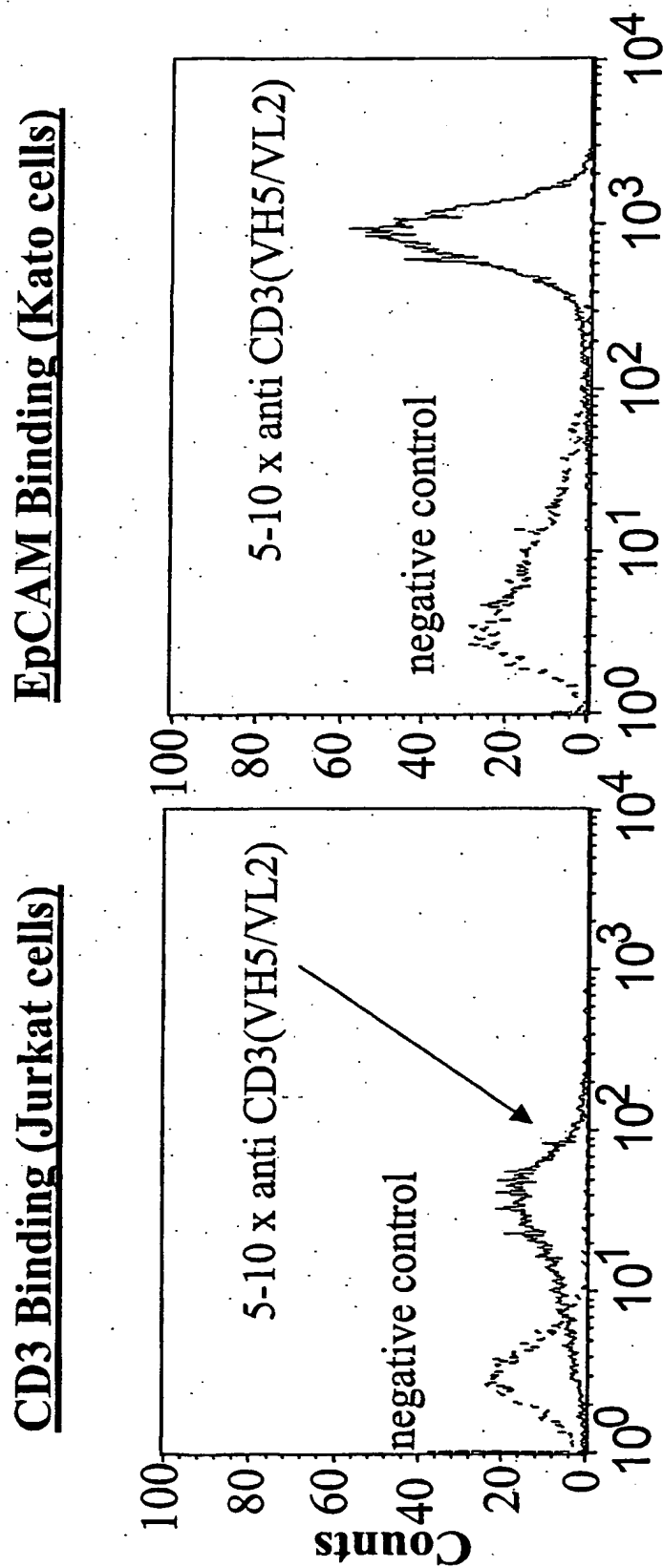


EpCAM Binding (Kato cells)



3-1 x
antiCD3(VH5/VL2)
(SEQ ID NO: 49)

Figure 16 B



5-10 x antiCD3(VH5/VL2)
(SEQ ID NO:63)

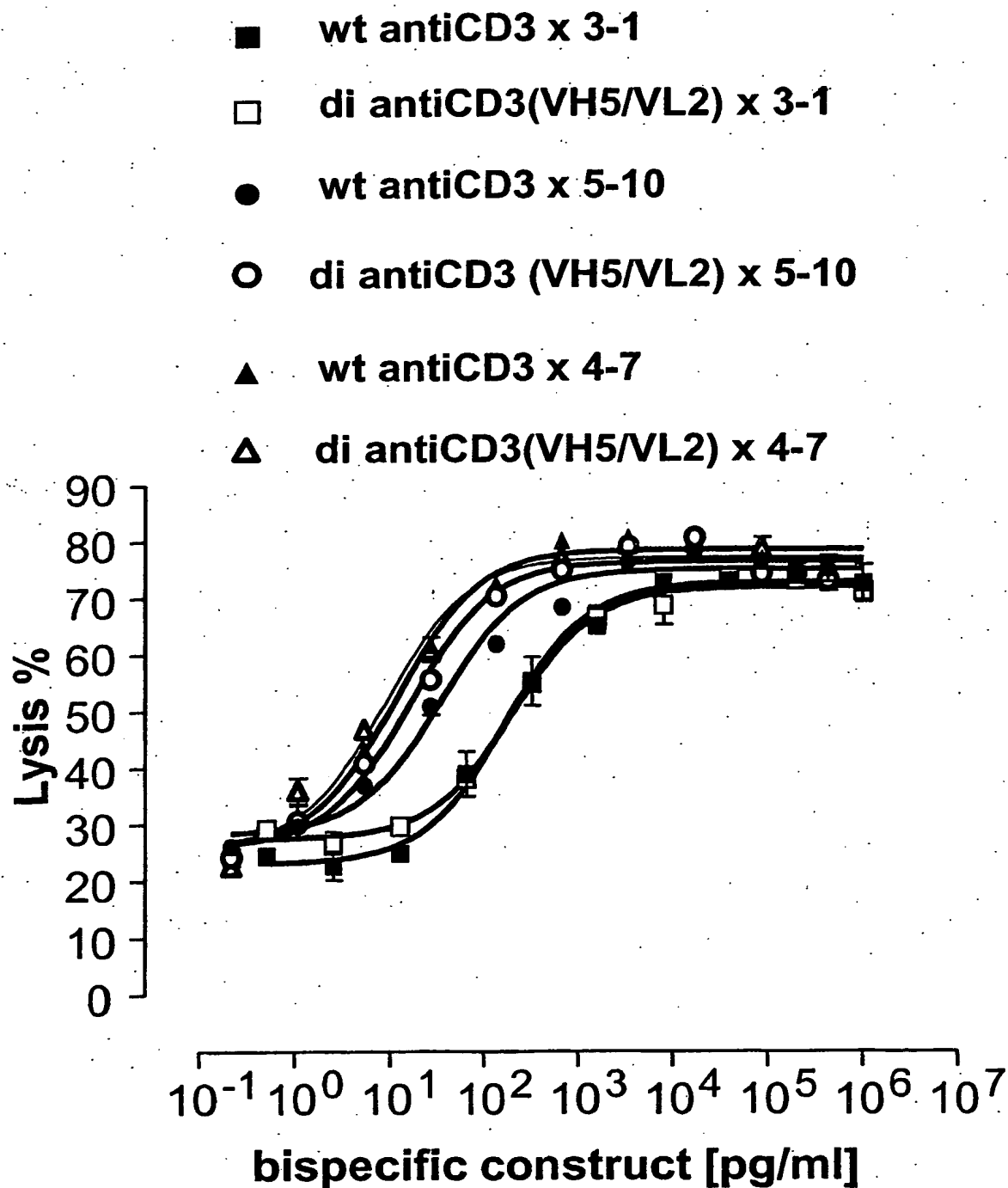
Figure 17

Figure 18